

WHAT IS CLAIMED IS:

1 1. A method for handling write errors in a non-redundant disk array
2 storage system, comprising:
3 issuing a command to write and verify data transfer when requested to write
4 data to a specified location address that is stored in an error table; and
5 reassigning the data to a new location address when the command to write
6 and verify the data transfer is unsuccessful.

1 2. The method of claim 1 wherein the error table records error locations
2 on a disk drive.

1 3. The method of claim 1 further comprising transferring the data to the
2 specified location address when a good status is returned in response to the
3 command to write and verify the data transfer.

1 4. The method of claim 1 wherein the error table comprises a write
2 recovery table.

1 5. The method of claim 1 wherein the error table comprises a combined
2 write recovery table and bad data table.

1 6. The method of claim 1 wherein the command to write and verify the
2 data transfer comprises a write/verify command.

1 7. The method of claim 1 wherein the command to write and verify the
2 data transfer comprises a write command followed by a read command with the
3 force unit access bit being set to 1 to force the data to be read from the disk drive
4 rather than from disk drive cache.

1 8. The method of claim 1 wherein the command to write and verify the
2 data transfer is unsuccessful only when a predetermined number of write and verify
3 retries is exhausted.

1 9. The method of claim 1 further comprising:
2 verifying the reassigning of data to a new location address;
3 detecting an error for the reassigning;
4 retrying the reassigning for a predetermined number of times; and
5 returning a fatal error status and marking the disk offline when the
6 predetermined number of times is exhausted.

1 10. The method of claim 1 further comprising deleting the specified
2 location address that is stored in the error table when the reassign of data is
3 successful.

1 11. The method of claim 1 further comprising deleting the specified
2 location address that is stored in the error table when the command to write and
3 verify the data transfer is successful.

12. A storage system, comprising:
an array of storage devices; and
a storage controller, coupled to the array of storage devices, the storage controller including a memory for maintaining an error table, the storage controller further being configured to issue a command to write and verify data transfer when requested to write data to a specified location address that is stored in an error table and reassign the data to a new location address when the command to write and verify the data transfer is unsuccessful.

13. The storage system of claim 12 wherein the error table records data error locations on a disk drive.

14. The storage system of claim 12 wherein the controller transfers the data to the specified location address when a good status is returned in response to the command to write and verify the data transfer.

15. The storage system of claim 12 wherein the error table comprises a write recovery table.

16. The storage system of claim 12 wherein the error table comprises a combined write recovery table and bad data table.

17. The storage system of claim 12 wherein the command to write and verify the data transfer comprises a write/verify command.

1 18. The storage system of claim 12 wherein the command to write and
2 verify the data transfer comprises a write command followed by a read command
3 with the force unit access bit being set to 1 to force the data to be read from the
4 storage device rather than from cache of the storage controller.

1 19. The storage system of claim 12 wherein the command to write and
2 verify the data transfer is unsuccessful only when a predetermined number of write
3 and verify retries is exhausted.

1 20. The storage system of claim 12 wherein the storage controller further
2 verifies the reassigning of data to a new location address, detects an error for the
3 reassigning, retries the reassigning for a predetermined number of times, returns a
4 fatal error status and marks the storage device offline when the predetermined
5 number of times is exhausted.

1 21. The storage system of claim 12 wherein the storage controller deletes
2 the specified location address that is stored in the error table when the reassign of
3 data is successful.

1 22. The storage system of claim 12 wherein the storage controller deletes
2 the specified location address that is stored in the error table when the command to
3 write and verify the data transfer is successful.

1 23. A error table disposed in a storage controller, the error table
2 configured with addresses for data error locations on a storage device so that for a
3 write request, the storage controller knows to perform a write and verify command to
4 transfer the data to the storage device and to verify the successful transfer of the
5 data to the storage device.

1 24. The error table of claim 23 further comprising a write recovery bit to
2 indicate when an address associate therewith requires a write recovery during a
3 write.

1 25. The error table of claim 24 wherein the write recovery bit allows a bad
2 data table to be combined with the write recovery table.

1 26. The error table of claim 25 wherein on a read the error table is
2 searched only for an address specified in a read request together with an associated
3 write recovery bit being set to 0.

1 27. A memory configured for storing an error table and data fields, the
2 error table comprising a non-volatile array configuration information storage area.

1 28. An article of manufacture comprising a program storage medium
2 readable by a computer, the medium tangibly embodying one or more programs of
3 instructions executable by the computer to perform a method for handling write
4 errors in a non-redundant disk array storage system, the method comprising:
5 issuing a command to write and verify data transfer when requested to write
6 data to a specified location address that is stored in an error table; and
7 reassigning the data to a new location address when the command to write
8 and verify the data transfer is unsuccessful.

1 29. A method for handling write errors in a non-redundant disk array
2 storage system, comprising:
3 recording read error locations in an error table;
4 issuing a command to write and verify data transfer when requested to write
5 data to a specified location address that is stored in the error table; and
6 reassigning the data to a new location address when the command to write
7 and verify the data transfer is unsuccessful.